

CLAIMS

1. A method of manufacturing pulp using *Rhodophyta*, comprising:
 - immersing *Rhodophyta* in an extraction solvent able to dissolve agar gel for a predetermined time period to dissolve the agar gel in the extraction solvent;
 - 5 converting the dissolved agar gel into fiber by reacting the dissolved agar gel with a reaction solvent;
 - curing the fiber using a curing agent; and
 - pulping the cured fiber.
2. The method according to claim 1, wherein the conversion into fiber is performed by continuously extruding the agar gel solution into the reaction solvent using an extrusion nozzle.
- 10 3. The method according to claim 1, wherein the conversion into fiber is performed by intermittently extruding the agar gel solution into the reaction solvent using a spray nozzle.
4. A method of manufacturing pulp using *Rhodophyta*, comprising:
 - 15 immersing *Rhodophyta* in an extraction solvent able to dissolve agar gel for a predetermined time period to dissolve the agar gel in the extraction solvent; and
 - pulping after collecting a pulp material remaining after removal of the solution containing the dissolved agar gel.
5. A method of manufacturing pulp using *Rhodophyta*, comprising:
 - 20 immersing *Rhodophyta* in an extraction solvent able to dissolve agar gel for a predetermined time period to dissolve a portion of agar gel in the extraction solvent;
 - collecting a pulp material remaining after removal of the solution containing the dissolved portion of agar gel;
 - curing the chipped pulp material using a curing agent; and
 - pulping the cured fiber.
- 25 6. The method according to claim 5, wherein the dissolution of the portion of agar gel in the extraction solvent is performed by immersing *Rhodophyta* in an alcohol-based solvent, followed by

boiling.

7. The method according to any one of claims 1 to 3, 5 and 6, wherein the curing agent comprises aldehyde.

8. The method according to any one of claims 1 to 3, 5 and 6, wherein the curing agent comprises
5 Glyoxal.

9. The method according to any one of claims 1 to 6, wherein the extraction solvent is used at a temperature of 80°C or higher.

10. The method according to any one of claims 1 to 5, wherein the extraction solvent comprises any one selected from water, alcohols, and ketones.

10 11. The method according to any one of claims 1 to 6, wherein the reaction solvent is used at a temperature of 80°C or higher.

12. The method according to claim 11, wherein the reaction solvent comprises alcohols or ketones, provided that the reaction solvent is a different material from the extraction solvent.

13. The method according to any one of claims 1 to 6, wherein the dissolution is performed by
15 chipping *Rhodophyta*, followed by immersion in the extraction solvent.

14. The method according to any one of claims 1 to 6, wherein *Rhodophyta* is selected from *Gelidium amansii*, *Gracilaria verrucosa*, *Cottonii*, *Spinosum*, and combinations thereof.

15. A pulp manufactured using *Rhodophyta* according to any one of claims 1 to 6.

16. A method of manufacturing paper, comprising:

20 preparing pulp manufactured using *Rhodophyta* according to any one of claims 1 to 6; and manufacturing paper using the pulp.

17. Paper manufactured according to claim 16.

18. A method of manufacturing paper, comprising:

preparing pulp manufactured using *Rhodophyta* according to any one of claims 1 to 3;

25 preparing pulp manufactured using *Rhodophyta* according to any one of claims 4 to 6; preparing wood pulp;

- mixing two or more of the above pulps; and
manufacturing paper using the pulp mixture.
19. Paper manufactured according to claim 18.